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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/702,667	11/01/2000	Mariana Munteanu	50103-337	9652

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EXAMINER

BERNATZ, KEVIN M

ART UNIT

PAPER NUMBER

1773

DATE MAILED: 03/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/702,667	Applicant(s) MUNTEANU ET AL.	
	Examiner Kevin M Bernatz	Art Unit 1773	

#27

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on ____.

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-9 is/are pending in the application.

4a) Of the above claim(s) ____ is/are withdrawn from consideration.

5) ☐ Claim(s) ____ is/are allowed.

6) ☒ Claim(s) 1-9 is/are rejected.

7) ☐ Claim(s) ____ is/are objected to.

8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some * c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. ____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) <input type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____.
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.	6) <input type="checkbox"/> Other: _____

DETAILED ACTION

Response to Amendment

1. Amendments to claims 8 and 9, filed on January 8, 2003, have been entered in the above-identified application.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.


Declaration

3. The substitute declaration or oath filed January 14, 2003 has been entered in the above-identified application.

Claim Rejections - 35 USC § 102

4. Claims 1, 7 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohkijima et al. ('262).

Regarding claims 1 and 7, Ohkijima et al. disclose a magnetic recording medium comprising a non-magnetic substrate (*col. 5, lines 3 – 5*), an underlayer on a non-magnetic substrate (*col. 5, lines 12 – 13*), a magnetic (*col. 4, lines 38 – 40: "a non-magnetic or feebly magnetic", emphasis added; and examples*) intermediate layer (i.e. applicants' "first magnetic layer" on the underlayer (*col. 5, lines 17 – 19*) and a second magnetic layer on the intermediate layer (*col. 5, lines 15 – 17*); wherein the second magnetic layer exhibits a higher magnetic saturation (Ms) than the intermediate layer



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(col. 1, lines 55 – 63; col. 5, lines 3 – 13; and Table 1; e.g. example 26 which has an intermediate layer with an M_s of 16 ($B_s = 4\pi M_s$) and a second magnetic layer with an M_s of 438).

Regarding the limitation “the first magnetic layer exhibits a higher signal-to-media noise ratio (SMNR) than the second magnetic layer”, it has been held that where claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established and the burden of proof is shifted to applicant to show that prior art products do not necessarily or inherently possess characteristics of claimed products where the rejection is based on inherency under 35 USC 102 or on *prima facie* obviousness under 35 USC 103, jointly or alternatively. Therefore, the *prima facie* case can be rebutted by **evidence** showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). “When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not.” *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

In the instant case, Ohkijima et al. disclose a prior art product possessing substantially identical structure to the claimed product (i.e. a dual layered structure comprising two Co-alloy layers, each of which are magnetic, wherein the second layer possesses a higher saturation magnetization than the first layer). In addition, Ohkijima et al. example 26 disclose an embodiment wherein the Cr content in the first layer is

greater than the Cr content in the second layer, wherein it is known in the art that a higher Cr content leads to improved SMNR performance (applicants' admissions, page 4, lines 15 – 16).

Therefor, the examiner deems there is sound basis for believing that the limitation wherein "the first magnetic layer exhibits a higher signal-to-media-noise ratio (SMNR) than the second magnetic layer" would necessarily flow from the structure embodied by example 26. The examiner notes that there is currently no evidence of record showing that the disclosed prior art product (e.g. example 26) does not necessarily possess the characteristics of the claimed product.

Regarding claim 8, Ohkijima et al. disclose the second layer as directly deposited on the first layer (*col. 5, lines 15 – 19*).

Claim Rejections - 35 USC § 103

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkijima et al. as applied above.

Ohkijima et al. is relied upon as described above.

Ohkijima et al. fails to explicitly disclose an embodiment meeting applicants' claimed thickness limitations.

However, Ohkijima et al. disclose overlapping thickness values for both the first and second layer (*col. 3, lines 57 – 58 and lines 65 – 68*).

It would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable such as the first and second

layer thickness values through routine experimentation, especially given the teaching in Ohkijima et al. regarding acceptable thickness values and the known fact that the thicker the layer, the more expensive the cost. *In re Boesch*, 205 USPQ 215 (CCPA 1980), *In re Woodruff*, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

6. Claims 1, 5 – 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moroishi et al. ('324) in view of Miyazaki et al. ('945) and Zhang et al. (IEEE Trans. Mag., 32(5), 1996, 3590 – 3592).

Regarding claims 1 and 7, Moroishi et al. disclose a magnetic recording medium comprising a non-magnetic substrate (*Figure 1, element 1*), an underlayer on a non-magnetic substrate (*element 2*), a first magnetic layer on the underlayer (*element 3*) and a second magnetic layer on the first magnetic layer (*element 5 and col. 5, lines 9 – 16*).

While Moroishi et al. disclose the importance of controlling the crystal structure of the magnetic layer directly deposited on the underlayer in order to reduce the overall medium noise (*col. 2, line 63 bridging col. 3, line 38*), Moroishi et al. fail to disclose the first magnetic layer exhibiting a higher SMNR than the second magnetic layer.

However, Zhang et al. teach a double layered magnetic recording media wherein the "bottom-layer film not only seeds the microstructure for the upper-layer film, but also determines the noise characteristics of the double layer film" (*Abstract*), wherein the preferred structure comprises a first magnetic layer possessing a higher SMNR than the second magnetic layer (*Table 1, Series A and B and Results and Discussion*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Moroishi et al. to utilize a first magnetic layer exhibiting a higher SMNR than the second magnetic layer as taught by Zhang et al. in order to reduce the overall medium noise, since the first magnetic layer determines the overall noise characteristics of the double layer film.

Neither Moroishi et al. nor Zhang et al. disclose the second magnetic layer exhibiting a higher M_s than the first magnetic layer.

However, Miyazaki et al. teach a double layered magnetic recording medium wherein the second magnetic layer exhibits a higher M_s than the first magnetic layer (*Abstract and col. 2, lines 42 – 50*) in order to produce a recording medium possessing good output over a range of low to high density, as well as good still and electromagnetic characteristics (*col. 1, lines 5 – 10 and col. 2, lines 23 – 27*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Moroishi et al. in view of Zhang et al. to utilize a second magnetic layer possessing a higher M_s than the first magnetic layer as taught by Miyazaki et al. in order to produce a recording medium possessing good output over a range of low to high density, as well as good still and electromagnetic characteristics.

Regarding claim 5, Moroishi et al. disclose underlayers meeting applicants' claimed limitations (*col. 13, lines 18 – 24 and Figure 1*).

Regarding claim 6, Moroishi et al. disclose the first underlayer comprising Cr or any body-centered cubic close-packed crystalline structure (*col. 10, lines 38 – 47; col.*

13, lines 18 – 24; and Figure 1) and the examiner has deemed “Cr” to read on “Cr alloy” given applicants’ disclosure regarding suitable composite underlayers comprising a first Cr alloy layer and second Cr alloy layer, wherein Cr is disclosed as suitable for the second underlayer (*specification page 9, lines 5 – 13*).

Regarding claim 9, Moroishi et al. disclose first and second magnetic layer thickness values meeting applicants’ claimed limitations (*col. 5, lines 41 – 43*), as well as the fact that thickness of the multiple magnetic layers need not be identical (*col. 5, lines 50 – 51 and col. 8, lines 63 – 64*).

7. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moroishi et al. in view of Miyazaki et al. and Zhang et al. as applied above, and further in view of Yoshikawa et al. (‘233 B1), applicants’ admissions and Song et al. (IEEE Trans. Mag., 30(6), 1994, 4011 – 4013) for the reasons of record as set forth in Paragraph No. 7 of the Office Action mailed on October 11, 2002 (Paper No. 4).

8. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moroishi et al. in view of Miyazaki et al., Zhang et al., Yoshikawa et al., applicants’ admissions and Song et al. as applied above, and further in view of Bian et al. (‘388) for the reasons of record as set forth in Paragraph No. 8 of the Office Action mailed on October 11, 2002 (Paper No. 4).

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9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moroishi et al. in view of Miyazaki et al. and Zhang et al. as applied above, and further in view of Ross et al. ('404) for the reasons of record as set forth in Paragraph No. 9 of the Office Action mailed on October 11, 2002 (Paper No. 4).

Response to Arguments

10. The rejection of claims 1 and 7 under 35 U.S.C § 102(b) – Ohkijima et al.

Applicant(s) argue(s) that Ohkijima et al. does not anticipate the claimed invention because the intermediate layer of Ohkijima et al. is not magnetic. The examiner respectfully disagrees.

As is clearly taught by Ohkijima et al., the intermediate layer is either “non-magnetic or feebly magnetic” (*col. 4, lines 38 – 40 and example 26*). The relied upon embodiment (i.e. example 26) clearly teaches a magnetic intermediate layer as unequivocally disclosed in Table 1 (wherein the intermediate layer possesses a non-zero $B_s \cdot t$ value).

Applicants further argue that since the intermediate layer is not magnetic, the Examiner has not discharged his burden of a *prima facie* case showing that the claimed “feature **necessarily** flows from the teachings of the applied prior art” (emphasis in original – page 4 of applicants' response). The Examiner respectfully disagrees.

As demonstrated above, applicants' assertion that the intermediate layer is non-magnetic is incorrect. Therefor, applicants' assertion that there is no *prima facie* case because the intermediate layer is non-magnetic is also incorrect. The Examiner has

provided sound basis for the position that the claimed limitation necessarily flows from the prior art teaching and has therefore met the burden of establishing a *prima facie* case of anticipation (see rejection of record).

11. The rejection of claims 1 and 5 - 7 under 35 U.S.C § 103(a) – Moroishi et al. in view of Miyazaki et al. and Zhang et al.

Applicant(s) argue(s) that the Examiner has used impermissible hindsight to reconstruct the claimed invention. The examiner respectfully disagrees.

As is clearly stated in the rejection of record, the Examiner has met his burden to provide motivation taken from the prior art for each and every modification of the primary reference. Applicants are reminded that an invention may be obvious if the prior art has different reasons for doing what the applicant has done. "It has long been held that a rejection under 35 USC 103 based upon a combination of references is not deficient solely because the references are combined based upon a reason or technical consideration which is different from that which resulted in the claimed invention." *Ex parte Raychem Corp.* 17 USPQ 2d 1417, 1424 (BPAI 1990). Cites *In re Kronig* 190 USPQ 425 (CCPA 1976); *In re Gershon* 152 USPQ 602 (CCPA 1967). See also *In re Beattie* 24 USPQ 2d 1040, 1042 (Fed. Cir. 1992); *In re Wiseman* 201 USPQ 638 (CCPA 1979); *In re May* 197 USPQ 601 (CCPA 1978); *In re Lintner* 173 USPQ 560, 562 (CCPA 1972); *In re Tomlinson* 150 USPQ 623 (CCPA 1966); and *In re Kemps*, 97 F.3d 1427, 1430, 40 USPQ2d 1309, 1311 (Fed. Cir. 1996).

Applicants further argue that the cited prior art does not exist and is therefore impossible for applicants to evaluate the rejection of record. The Examiner respectfully disagrees.

The Examiner notes that applicants IDS clearly states that the reference is to "Bing Zhang et al." (see IDS attached to Paper No. 4). Therefor the reference is quite clearly (and correctly) referred to as the Zhang et al. reference since Zhang is only one of 5 co-authors of the paper printed in IEEE Trans. on Mag. in 1996, Vol. 32 (5).

Applicants additionally argue that the prior art invention is patentably distinct from the claimed invention, since the prior art invention requires non-magnetic space layers between the magnetic layers. The Examiner respectfully disagrees.

The Examiner notes that claims 1 – 7 and 9 are all open to the presence of non-magnetic spacer layers between the magnetic layers.

Applicants further argue the combination of the prior art references are improper because Moroishi et al. (i.e. "and others") requires a non-magnetic spacer layer between the magnetic layers and neither additional reference uses non-magnetic spacer layers. The Examiner respectfully disagrees.

While Moroishi et al. teach non-magnetic spacer layers between two magnetic layers, the Examiner notes that Moroishi et al. is also open to two or more magnetic layers being directly deposited on each other without a non-magnetic spacer layer (*col. 8, lines 4 – 52: "However, when three or more magnetic layers are provided, every two adjacent magnetic layers (sic) may not have a non-magnetic layer between them"*). Furthermore, while applicants' assert that the spacer layer is "condemned by Zhang et

al. (sic)" (page 6 of response), the Examiner finds no such language in the relied upon Zhang et al. reference. The only mention of a non-magnetic spacer layer made by Zhang et al. is that "*CoCrPt magnetic films using Cr as a non-magnetic spacer layer have also been explored to reduce media noise [3]*" (Introduction). While Zhang et al. report on dual layered magnetic films without a non-magnetic spacer layer, Zhang et al. never teach, nor suggest, that the addition of a non-magnetic spacer layer would destroy the disclosed invention. If anything, Zhang et al. suggest that a non-magnetic spacer layer would lead to an even greater reduced media noise!

With regard to the Miyazaki et al. reference, Miyazaki et al. is completely silent with regard to any benefit or detriment of a non-magnetic spacer layer. The Examiner notes that Moroishi et al. clearly teaches that the non-magnetic spacer layer is beneficial (col. 1, lines 39 – 45: "*Because the magnetic layer of this magnetic recording medium is split (sic) into two layers by the non-magnetic spacer layer, it has a smaller thickness of each magnetic layer compared with that of those media comprising one magnetic layer and having the same total magnetic layer thickness and hence it can reduce noises upon reproducing recorded signals*"). Therefore, the Examiner does not find applicants' arguments convincing that the existence of the non-magnetic spacer layer in Moroishi et al. makes Miyazaki et al. or Zhang et al. non-combinable with the Moroishi et al. reference.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Applicants' amendment resulted in embodiments not previously considered (i.e. claims 8 and 9) which necessitated the new grounds of rejection, and hence the finality of this action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M Bernatz whose telephone number is (703) 308-1737. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on (703) 308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are (703)

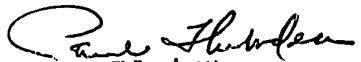
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872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.



KMB
February 28, 2003


Paul Thibodeau
Supervisory Patent Examiner
Technology Center 1700